

Chapter 5 Practice Test '0910

- 1) The slope of the line between $(2, 10)$ and $(x_2, 4)$ is -3 . Find the value of x_2 . Show your work.

$$-3 = \frac{4-10}{x_2-2} = \frac{-6}{x_2-2} \quad \boxed{x_2 = 4}$$

- 2) Give the slope and the y -intercept for each equation.

a. $y = -4 - 3x$

$$m = -3$$

$$y\text{-int} = -4$$

b. $2x + 7 = y$

$$m = 2$$

$$b = 7$$

c. $38x - 10y = 24$

$$m = 3.8$$

$$b = -2.4$$

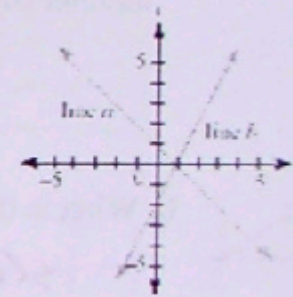
- 3) Line a and line b are shown on the graph at right. Name the slope and the y -intercept, and

Line A

$$y = -x + 1$$

Line B

$$y = 2x - 2$$



write the equation for each line. Check your equations by graphing.

- 4) Write each equation in the form requested. Check your answers by graphing.

- a. Write $y = 13.6(x - 1902) + 158.2$ in intercept form.

$$y = 13.6(0 - 1902) + 158.2 \rightarrow y = 13.6x - 25,709$$

- b. Write $y = -5.2x + 15$ in point-slope form using $x = 10$ as the first coordinate of the point.

$$(10, -37) \text{ so } \boxed{y = -5.2(x - 10) + -37}$$

5) Consider the point-slope equation $y = -3.5 + 2(x + 4.5)$.

a. Name the point used to write this equation.

$$(-4.5, -3.5)$$

b. Write an equivalent equation in intercept form.

$$y = 2x + 5.5$$

d. A point on the line has a y -coordinate of 16.5. Find the x -coordinate of this point and use this point to write an equivalent equation in point-slope form.

$$x = 5.5$$

$$y = 2(x - 5.5) + 16.5$$

6) Show all steps for a symbolic solution to each problem.

a. $4 + 2.8x = 51$

$$x \approx 16.79$$

b. $38 - 0.35x = 27$

$$x \approx 31.43$$

c. $11 + 3(x - 8) = 41$

$$x = 18$$

d. $220 - 12.5(x - 6) = 470$

$$x = 26$$

- 7) Suppose Karl bought a used car for \$12,600. Each year its value is expected to decrease by \$1,350.

a. Write an equation modeling the value of the car over time. Let x represent the number of years Karl owns the car, and let y represent the value of the car in dollars.

$$y = -1350x + 12,600$$

b. What is the slope, and what does it mean in the context of the problem?

$$\text{slope} = -1350$$

The value of the car decreases by \$1350 per year

c. What is the y -intercept, and what does it mean in the context of the problem?

The value of the car was \$12,600 when it was first bought

- 8) A possible linear model relating the time x to the temperature y of a pot of water heating is $y = 30 + 0.375(x - 36)$.

a. What equation could you solve to find how long it would take before the pot of water reaches 43°C ?

$$43 = 30 + 0.375(x - 36)$$

$$x = 70\frac{2}{3}$$

b. Find the approximate time indicated in 8a using a table or graph.

used table to verify

c. Show a symbolic solution for your equation in 8a.

$$\frac{43 - 30}{0.375} + 36 = x = 70\frac{2}{3}$$

9

- a. Find the five-number summaries for the year and height data.

Year

$$\min = 1952$$

$$Q_1 = 1962$$

$$\text{med} = 1976$$

$$Q_3 = 1990$$

$$\max = 2000$$

Height

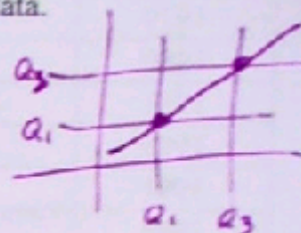
$$\min = 1.67$$

$$Q_1 = 1.835$$

$$\text{med} = 1.93$$

$$Q_3 = 2.02$$

$$\max = 2.05$$



- b. Name the Q-points for this data set.

$$(1962, 1.835)$$

$$(1990, 2.02)$$

- c. Write an equation for the line through the Q-points.

$$\frac{2.02 - 1.835}{1990 - 1962} = \frac{0.185}{28} \approx 0.0066$$

$$y = 0.0066(x - 1962) + 1.835$$

- d. Graph the line and the data, and explain whether or not you think this line is a good model for the data pattern.

fits well

- e. Predict the winning height for the year 2012.

$$0.0066(2012 - 1962) + 1.835$$

$$\approx 2.165$$

10) Explain how to find the equation of a line when you know

a. The slope and the y-intercept.

use $y = mx + b$
 \downarrow \downarrow
 slope y-int

b. Two points on that line.

find the slope $m = \frac{y_2 - y_1}{x_2 - x_1}$ then plug into $y = m(x - x_1) + y_1$
 \downarrow \downarrow \downarrow
 slope point

11) This table shows the federal minimum hourly wage for 1974–1997.

Year (x)	Hourly Minimum Wage
1974	\$1.90
1975	\$2.00
1976	\$2.20
1977	\$2.30
1978	\$2.65
1979	\$2.90
1980	\$3.10
1981	\$3.35
1990	\$3.80
1991	\$4.25
1996	\$4.75
1997	\$5.15

used 74 for 1974

<u>Year</u>	<u>Wage</u>
$Q_1 = 76.5$	$Q_1 = 2.25$
$Q_3 = 90.5$	$Q_3 = 4.025$

$(76.5, 2.25)$ $(90.5, 4.025)$

$$m = \frac{4.025 - 2.25}{90.5 - 76.5} \approx 0.127$$

11cont.

- a. Find the line of fit based on Q-points.

$$y = 0.127(x - 76.5) + 2.25$$

- b. Give the real-world meaning of the slope.

The wage goes up 12.7 cents on average per year

- c. Use your model to predict the minimum hourly wage for 2005.

$$y = 0.127(105 - 76.5) + 2.25$$

$$\approx \$5.87$$

- d. Predict when the minimum hourly wage would have been \$1.00.

$$1 = 0.127(x - 76.5) + 2.25$$

$$x = 1966$$